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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,152	02/28/2002	Takashi Kakiuchi	107337-00011	4924

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EXAMINER
SWERDLOW, DANIEL

ART UNIT	PAPER NUMBER
2644	

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	**Applicant(s)**	
Office Action Summary	10/084,152	KAKIUCHI, TAKASHI	
	Examiner	**Art Unit**	
	Daniel Swerdlow	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 February 2002</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-8* is/are rejected.

7)☒ Claim(s) *3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>28 February 2002</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Priority

1.   Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers

have been placed of record in the file.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1 and 4 through 8 are rejected under 35 U.S.C. 102(b) as being anticipated by

Locke et al. (US Patent 5,528,663).

4.   Regarding Claim 1, Locke discloses a DTMF detection system for incorporation into any

device where DTMF tones must be detected (i.e., a push-button signal receiving circuit for

receiving a push-button signal and identifying a dialed number based on the received push-

button signal) (column 3, lines 55-58) comprising: a low band and high band portion of a lower

filter bank (Fig. 3, reference 152, 154, 210-216, 218-224, 230, 232; column 7, lines 40-48) that

correspond, respectively, to the first and second frequency detecting portions claimed and

receive even samples (i.e., over one or more periods) of an input signal (Fig. 3, reference 110)

and determine DTMF identity (i.e., detect frequencies to extract identification signals) (column

5, lines 58-67). Locke further discloses a low band and high band portion of an upper filter bank

and associated selectors (Fig. 3, reference 182, 184, 240, 242; column 7, line 66 through column

8, line 12) that correspond, respectively, to the third and fourth frequency detecting portions claimed and receive even and odd samples (i.e., over more periods than the first and second portions) (column 8, lines 24-29) of an input signal (Fig. 3, reference 110) and determine DTMF identity (i.e., detect frequencies to extract identification signals) (column 5, lines 58-67). Locke further discloses a rating algorithm and a timing/stability algorithm (Fig. 2, reference 54, 56; column 2, line 66 through column 3, line 17) that correspond to the valid signal determining portion claimed and determine the quality (i.e., validity) of the signal. Locke further discloses a timing/stability algorithm (Fig. 2, reference 56; column 11, lines 14-22) that determines validity based on the duration of continuance of detection of both the high frequency component and the low frequency component (i.e., continuance times of the identification signals extracted by said first and second frequency detecting portion). Locke further discloses low and high band selector algorithms (Fig. 3, reference 230, 232; column 8, lines 13-23) that correspond to part of the first and second frequency detection portion claimed enabling only detected frequencies for processing by the high band and low band selectors (Fig. 3, reference 240, 242; column 8, lines 23-33) that correspond to part of the first and second frequency detection portion claimed. As such, detection can only occur when the corresponding parts of the two filter banks detect the same frequencies (i.e., coincidence of the frequencies detected by said first and third frequency detecting portion, and coincidence of the frequencies detected by said second and fourth frequency detecting portion). Locke further discloses a secondary timing algorithm (i.e., dialed number output portion) that produces a DTMF output (Fig. 2, reference 58; column 12, lines 3-5) (i.e., outputs the dialed number based on the detected low and high frequencies if the push-button signal is judged valid).

5.   Regarding Claim 4, Locke further discloses a timing/stability algorithm (Fig. 2, reference 56; column 11, lines 14-22) that determines validity based on the duration of continuance of detection of both the high frequency component and the low frequency component over a capture period (i.e., if the identification signals extracted by said first and second frequency detecting portion continue for a fixed time). Locke further discloses low and high band selector algorithms (Fig. 3, reference 230, 232; column 8, lines 13-23) that correspond to part of the first and second frequency detection portion claimed enabling only detected frequencies for processing by the high band and low band selectors (Fig. 3, reference 240, 242; column 8, lines 23-33) that correspond to part of the first and second frequency detection portion claimed. As such, detection can only occur when the corresponding parts of the two filter banks detect the same frequencies (i.e., the frequencies detected by said first and third frequency detecting portion coincide and if the frequencies detected by said second and fourth frequency detecting portion coincide).

6.   Regarding Claim 5, Locke further discloses rejection of a signal if the DTMF value varies (i.e., judges a valid length of the push-button signal to be terminated if the identification signals extracted by said first and second frequency detecting portion have discontinued for a fixed time) (column 11, lines 39-41).

7.   Regarding Claim 6, Locke further discloses low and high band selector algorithms (Fig. 3, reference 230, 232; column 8, lines 13-23) that correspond to part of the first and second frequency detection portion claimed enabling only detected frequencies for processing by the high band and low band selectors (Fig. 3, reference 240, 242; column 8, lines 23-33) that correspond to part of the first and second frequency detection portion claimed. As such,

detection can only start when the lower filter bank detects the frequencies and enables the upper

filter bank (i.e., the third and fourth frequency detecting portion start the frequency detection

when the identification signals are extracted by the first and second frequency detecting portion).

8.   Regarding Claim 7, Locke further discloses low and high band selector algorithms (Fig.

3, reference 230, 232; column 8, lines 13-23) that correspond to part of the first and second

frequency detection portion claimed enabling only detected frequencies for processing by the

high band and low band selectors (Fig. 3, reference 240, 242; column 8, lines 23-33) that

correspond to part of the first and second frequency detection portion claimed. As such,

detection can only continue when the lower filter bank detects the frequencies and enables the

upper filter bank (i.e., the third and fourth frequency detecting portion terminate the frequency

detection when the identification signals extracted by the first and second frequency detecting

portion discontinue).

9.   Claim 8 is essentially similar to Claim 1 and is rejected on the same grounds.

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

11.   Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Locke in view of

Richards (US Patent 4,042,789).

12.   Regarding Claim 2, as shown above apropos of Claim 1, Locke discloses all elements

except frequency detection by measuring a time required until the number of times the signal

level of the input identification signal crosses a threshold reaches a predetermined number and

determining whether or not the measured time falls within an allowable time range. Richards

discloses tone-detector circuit that measures the interval of four zero crossings (i.e., a time

required until the number of times the signal level of the input identification signal crosses a

threshold reaches a predetermined number) and detects a tone according to period range (i.e.,

determining whether or not the measured time falls within an allowable time range) (column 2,

lines 25-36). Richards further discloses that this method of detection provides better

performance at the leading edge of a tone burst (column 2, lines 3-17). As such, it would have

been obvious to one skilled in the art at the time of the invention to apply the threshold crossing

method of Richards to the system taught by Locke for the purpose of realizing the aforesaid

advantages.

Allowable Subject Matter

13.   Claim 3 is objected to as being dependent upon a rejected base claim, but would be

allowable if rewritten in independent form including all of the limitations of the base claim and

any intervening claims.

14.   The following is a statement of reasons for the indication of allowable subject matter:

15.   Claim 3 claims the circuit of Claim 2 where the allowable time range for counting a

predetermined number of threshold crossings in detecting a particular tone is wider in the first

and second detecting portions than in the third and fourth detecting portions. Richards teaches

the selection of range of detection as being the center frequency plus or minus 2-½% (column 9, lines 19-22). As such there is no teaching or motivation to vary the precision of the detector according to which stage of a two-step detection process is operating. As such, Claim 3 is allowable matter.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 703-305-4088. The examiner can normally be reached on Monday through Friday between 8:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forrester Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Swerdlow, Patent Examiner Art Unit 2644